

# Hobbies

## WEEKLY

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## How the handyman can make a TABLE-TENNIS TABLE

**A**S there seems a better chance of buying plywood now, readers interested in the game of Table Tennis may care to make a suitable table themselves, to play it on. There is nothing difficult in the job, it is just a piece of ordinary carpentry. For the top, plywood,  $\frac{3}{4}$  in. thick is about the most suitable material. Thinner stuff could be used, but the stouter quality makes a more solid article and is much to be preferred.

If plywood is not available, some of the plywood substitute might be tried. To avoid unnecessary joints the sheets

should be as large as possible. For the trestles, to support the table, ordinary deal will suffice.

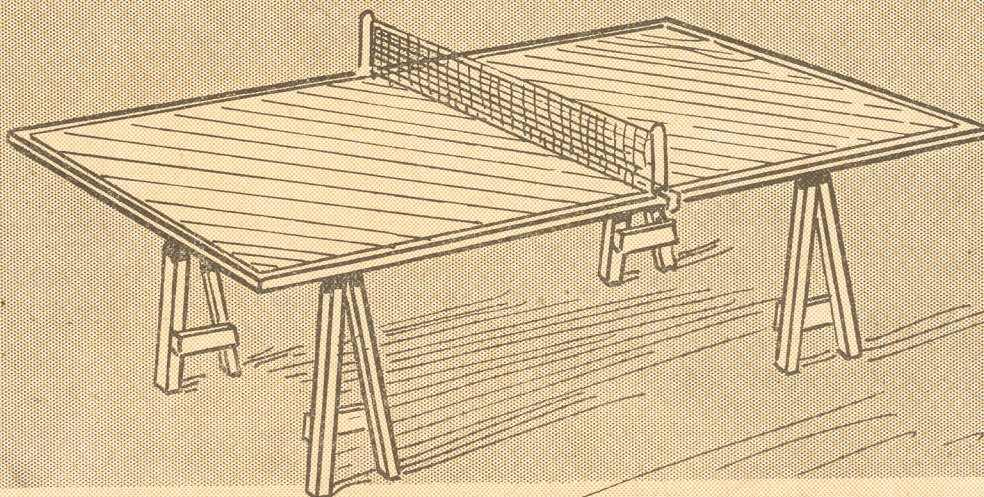
A framework on which the plywood is to be mounted must first be constructed. Fig. 1 (A) shows this, and as will be seen in the diagram, it consists of two long sides, two ends, and two long rails between. The latter can be cut from  $1\frac{1}{2}$  in. wide stuff, the remainder from 2 in. stuff. All should be  $\frac{3}{4}$  in. thick. To those who do not mind a little extra trouble, the lot could be sawn off a plank of the stated thickness. See the edges are planed quite square with the face sides.

### Joints to Use

The corner joints of the frame are of the simple halved kind, as shown at (C) in Fig. 3, the rails are tenoned in the ends, as at (D). Quite short tenons will serve here, say,  $\frac{1}{2}$  in. long. Cut the joints carefully so the frame, when glued together, lies flat and not twisted. A few screws may be added to the corner joints to strengthen the whole.

### A Flat Foundation

When the glue is hard, the top of the frame should be levelled all over, as may be found necessary, to



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provide a flat bed on which the plywood can be laid.

Unless thin plywood is used, it should be screwed to the frame from underneath, and screws of the right length be used, as no points should project above the table top. Glue can also be added, but must be hot and the work of screwing be done expeditiously before the glue gets cold. With thin wood it may be

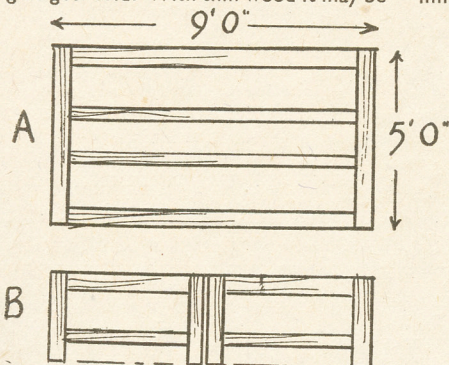


Fig. 1—The framework for the plywood

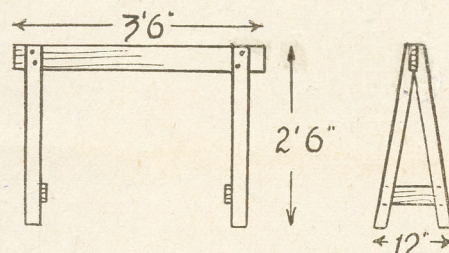


Fig. 2—Side and end view of trestles

necessary to nail through the plywood, but in this case use thin nails and punch them down a little.

The joints between the sheets of plywood should be glued, and should come, if at all possible, over the rails. Where this cannot be managed, a wood strip,  $\frac{3}{8}$  in. thick and 1 in. wide, should be glued over the joint underneath. The whole surface should now be gone over carefully, and any nail holes or faults in the wood, stopped level with plastic wood, and the whole glasspapered.

### Trestle Supports

To support the table a pair of light trestles should be made up. These are shown in Fig. 2. The top bars are  $1\frac{1}{2}$  ins. by 3 ins., the legs  $1\frac{1}{2}$  ins. by 2 ins., and the lower rails from board, 3 in. wide strips being suggested.

At Fig. 3 (E) a diagram is given to show how to cut the tops of the legs to give the necessary splay to them. Shallow grooves,  $\frac{1}{4}$  in. deep, are cut in the top bars, at 2 ins. in from the ends, into which the legs are firmly glued and screwed. The rails are cut to length and nailed across.

Where storage space is somewhat limited, a folding table may be more

folding upwards, so that the whole concern lies flat for placing against the wall. The long top rails are cut 2 ft. shorter than the length of the table, and in the centre of them a notch, 4 ins. long, and  $1\frac{1}{2}$  ins. deep is sawn out to clear the hinged ends of the table above. The width across the two rails is 3 ft. 6 ins.

The rails are connected together by cross bars, of 1 in. by 3 in. wood at each end, the bars being grooved  $\frac{1}{4}$  in. deep to receive them, as at (F). The rails, by the way, are cut from 1 in. by 3 in. deal.

The legs, 1 in. by 3 in. stuff also are fixed to the rails with iron bolts, so that they can be folded up for storage when not in use. Round the tops of these for neatness. The position of the legs is shown at (G) so that they can, when lowered down, press against the end bars at a suitable splay, say, 5 degrees from the vertical.

Ensure all four legs being at the same splay angle by setting a bevel, and drawing a pencil line at the angle, placing the legs in turn against the lines and then boring the holes for the bolts through legs and rails. It would be a good idea to cramp the legs in position when boring, to prevent them shifting from the guide lines.

This completes the work of construction. The surface of the table should be painted a flat green colour, and a 1 in. margin in white paint at the edges. The dimensions given provide for a table of standard size. Where the playing space is too limited for this the table can be made

smaller, but should be made as large as is possible, allowing sufficient room at the ends for play.

Remember too, that in playing, the table is frequently pushed and even on odd occasions, fallen upon. For this reason it must be sturdy and rigid as possible to prevent accidents to players and damage to the table. Another important point is the absolute smoothness of the top. Ensure the wood is glasspapered and that the coats of stain or paint, have no little blisters or "bumps".

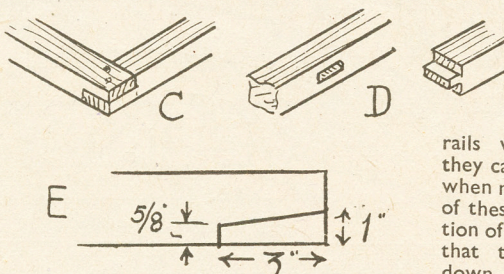


Fig. 3—Joints used in the framework

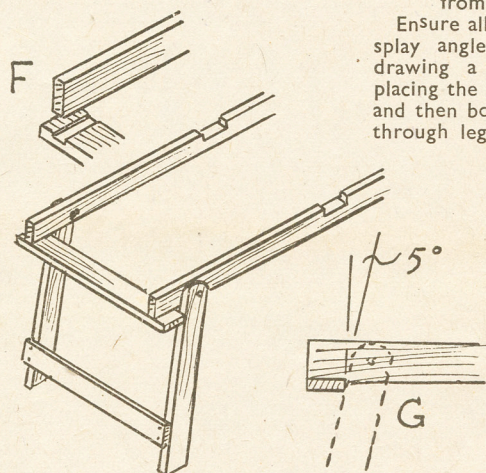


Fig. 4—A hinged folding type of leg

convenient. For this two separate frames are required, as at (B) in Fig. 1, jointed as for the previous table. These are separately covered with plywood, and then hinged together underneath. The kind of hinges to employ are known as flapbacks, 2 in. size, three being required. The position of these is left until the under frame, on which the table lies, is completed, to avoid any chance of them fouling the frame rails.

This underframe is shown in Fig. 4, and is of the folding variety also, the legs

## Precautions the Electrician must take—

FROM time to time articles dealing with mains-operated equipment are published, and these are welcomed by readers who wish to make use of their supplies instead of batteries, which are more costly and also require replacement from time to time.

However, constructors should never overlook that all mains-driven apparatus, whether home-made or commercially

manufactured, is capable of delivering shocks if wrongly handled. Because of this, the constructor who makes use of mains supplies should make it a rule never to touch any metal parts, connections, or so on without withdrawing the mains-supply plug.

Actually, shocks will usually only be felt as a smart tingling of the fingers, but if the constructor is holding some conducting object (such as a metal

screwdriver) and is standing on some conductive floor-surface (e.g., concrete) the shock may be more severe. Because of this no risks should be taken. If it is essential to make adjustments involving the touching of live connections, the constructor should use an insulated tool, if possible, or stand on a dry carpet and use one hand only with caution, if this is unavoidable. Better to be safe than sorry!



# The handyman can easily learn the various methods of HOW TO FIT BED SWITCHES

**T**HE convenience of being able to switch a bedroom light on and off from the bed is obvious, and this arrangement is quite easy to fit up. If desired none of the existing wiring need be disturbed, and the usual switch by the door will, of course, be retained in the usual way.

## A Plug-In Arrangement

The circuit for this is shown in Fig. 1. It has the advantage that none of the existing fittings or wiring need be disturbed in any way, which is very desirable if there is any doubt about the

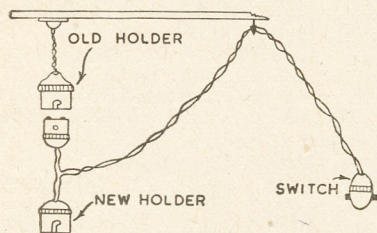


Fig. 1—Using a holder and adapter

permission of the owner being obtained. Three items are required. The switch can most conveniently be of the 'pear' type, totally enclosed and intended to hang from flexible wires. An ordinary bulb holder is also necessary, and an adapter. The latter resembles the bottom part of a bulb, but has a cover which is unscrewed to reveal terminal connections. A suitable length of twin flex is also needed, and all these parts can be obtained from popular stores or electricians.

Unscrew adapter and bulb holder and fit a 3 or 4 in. length of flex from one terminal on one to one terminal on the other, not forgetting to thread the wire through the covering caps so that the latter may afterwards be screwed on. Now part the ends of the twin flex and take one end to each of the remaining unused terminals. The pear switch is fitted to the other end of the twin flex, as shown in Fig. 1.

To use, remove the bulb from the existing holder and insert the adapter in its place. The bulb is placed in the new holder, any shade, etc., being left undisturbed.

As will be seen, this arrangement can be fitted up in any room in a few seconds, and taken down or moved if desired. The flex leads to the switch may be of any convenient length.

## A Permanent Installation

If it is in order to alter existing wiring, the arrangement shown in Fig. 2 can be used. Unscrew the cap of the bulb holder and remove one lead. Join the end of this lead to one of the switch leads (tight twisting will do) and cover with insulating tape. Now take

the other switch lead to the terminal in the holder left vacant by the removal of the original wire. This is shown in Fig. 2, where the cover of the bulb holder has not been replaced so that connections may be followed more easily.

Switch off the mains supply before making these changes, and take care that all joints are good. The junction of the wires should be properly covered, and the moulded cap of the bulb holder is replaced after wiring is completed. The whole operates in the same way as the arrangement shown in Fig. 1.

## A Bed Lamp

If it is necessary to have a light at the head of the bed, possibly for reading, this is quite easy to arrange. The lamp

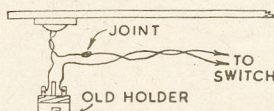


Fig. 2—Modifying existing wiring

may stand by the bed, or hang on the bed-rail, and the latter type is shown in Fig. 3. Wiring for either, however, would be the same.

From lampholder and switch twin flexible leads are taken to an adapter of the type shown in Fig. 1. This adapter is plugged into the fixture hanging from the ceiling, where the bulb was originally. So that the whole is as tidy as possible it is best to choose flex which matches the ceiling, and to take the wire along to the junction of wall and ceiling, and then down the wall to the head of the bed.

With this arrangement the switching will be the same as with the two circuits already described. That is, the light can be switched off at either the door or bed switch, and on again, when required, at the switch at which it was turned off.

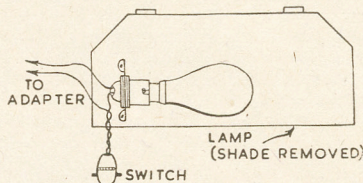


Fig. 3—Fitting a bed lamp

Usually this is perfectly convenient. The light can be switched on at the door when entering the room, and then controlled as necessary from the bed switch.

However, if the user arises in daylight he should remember to switch on at the bed light and off at the door switch, otherwise the door switch will not function when he enters the room at night, because both switches are in series. In practice this arrangement is

quite convenient and largely automatic. It is only necessary to remember that the light can only be switched on at the same switch as that used last to switch it off.

## Using Two Bulbs

With a shaded bedside lamp it may be desired to retain the light in the centre of the room also. To do this, a two-way adapter should be purchased and inserted in the bulb holder in the centre of the room. This holder will have two sockets; the adapter feeding the bedside lamp can be inserted in one, and the usual bulb in the other. Both lights will then operate together.

Such adapters can also be purchased with a small internal switch already connected. By operating this, the central bulb can be put out, leaving the bedside lamp only burning, when required.

It is also possible to unscrew the existing bulb holder and take the leads from the bedside lamp to the internal terminals to which the wires coming from the ceiling are connected. No adapter at all will then be required, but the bedside lamp cannot then be plugged easily into any room-light, as when an adapter is used.

## Two-Way Switching

With two-way switching a circuit is used in which two switches control a single light, but the light can always be switched on at either switch, notwithstanding which switch was used to turn the light out. Two two-way switches are required. One should be the usual wall type and will be fixed in place of the present switch, while the other will be of the pear type for use by the bed.

The complete circuit is shown in Fig. 4, and some of the existing wiring will have to be disturbed. Three

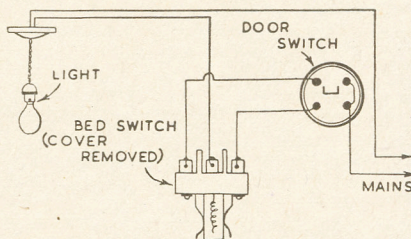


Fig. 4—Circuit for two-way switching

flexible leads are taken to the bed switch, which is shown with cover removed to make connections clear. These leads should be placed in the most tidy and convenient position, as before.

As a lead will usually go from the ceiling rose to the wall switch, the latter point may be the most convenient from which a wire can be taken to the centre contact of the bed switch. For the latter, it may be preferred to use a wall-type switch screwed near the bed.



# A suitable method of preserving old-time needlework is by FRAMING TAPESTRY

**T**HOSE readers who possess an example of old tapestry, or of ancient and modern needlework, will find a suitable framing shows up the beauties of the work. Frames, and stands as well, of such craft should be of simple design so as to not distract the eye of the viewer from the work displayed.

Many old-time drawing rooms displayed such work, as the collection of tapestry or working of it come to that, was the occupation of many ladies in more leisurely days. The taste for such work is still popular and it is worth displaying.

Fig. 1 shows two examples

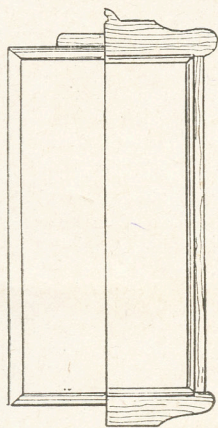


Fig. 1—Two frame suggestions

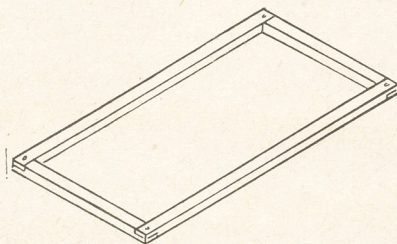


Fig. 2—The inner frame for the material

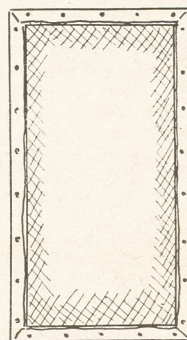


Fig. 3—Underside view

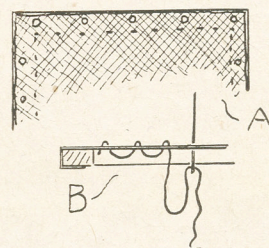


Fig. 4—Stitching the work

of suitable frames, half only of each design being shown, but before making the frames the tapestry or needlework must be gently straightened out to lie flat and be prepared for the purpose. An inner frame on which the tapestry will be fastened, should be constructed. Fig. 2 shows this—it is quite a simple job.

Make the frame from  $\frac{3}{4}$  in. by  $\frac{1}{2}$  in. deal (heavier stuff, if the example to be framed is a large one), using a simple halved corner joint, secured with one nail and no glue. The outside dimensions of the frame should be approximately the same as the sample of tapestry, when gently stretched out, and laid flat on the table.

## Backing Material

To this frame a covering of some strong black material is stretched and tacked over to the underside. A piece of some of the various black-out stuffs might do here. There is still plenty of choice. But the material must be a strong one, as it should remain taut to support the tapestry or needlework which is fastened to it.

When tacking the stuff do not place the tacks indiscriminately, but adopt the system previously explained in upholstery articles for stretching canvas. Fig. 3 shows an underside view of the frame, with the covering tacked down.

The edges of the covering should be

doubled over as tacked, so that the tacks go through a double thickness each time, also the corners should be most neatly folded before tacking, to avoid any lumpy bulges which might make the frame troublesome to fit in its outer show frame later on.

## Fitting the Tapestry

With the covering stretched over as tight as possible, turn the frame over for receiving the tapestry. This should be pressed flat, and laid over the frame, then it is gently stretched and held down with drawing pins all round, as at (A) in Fig. 4. Be careful in both stretching and pinning down, especially if the tapestry is very old. Avoid any distortion of the design by correcting the extent of tautness as the work

removed. The tapestry should now lie quite flat on the frame, and show not the slightest tendency to sink in the middle, or crease up anywhere. It is then ready for insertion in its show frame.

As stated at the commencement of this article, two examples of simple but suitable framing are given in Fig. 1. The left-hand side one is a frame of half-round moulding, of the usual picture frame style. The rebate must be deep enough to receive frame, glass and backing, as well, as in Fig. 5 (C), say,  $\frac{3}{4}$  in. deep, and can be in black or gold, both, perhaps, equally suitable.

It should, for preference, be rather narrow, but that will depend somewhat on the dimensions of the displayed tapestry or needlework. A width of  $\frac{1}{2}$  in. to 1 in. is suggested, but readers can, naturally, use their own taste and judgment on

progresses.

It may be added that any dust, etc., and some of this old work collects plenty, should be gently beaten and brushed out before stretching. When the job is satisfactory the tapestry should be further attached to its black foundation by a line of small stitches all around, close to the frame.

These stitches should be of black silk or cotton, and be made from underneath, as in detail (B). Here the stitches are shown as loops for clarity in following, but actually, of course, they will be drawn moderately tight, tight enough at any rate to hold the tapestry in position.

The stitches should be quite small where they hold the tapestry down, and should, if the work is neatly done, be inconspicuous. When the stitching is complete, the drawing pins can be

such a matter.

Make the frame or have it made up for you, with the rebate size approximately that of the inner frame, for the latter to fit snugly inside. Glass will most likely be introduced to keep the dust out, but the tapestry will remain flat even if the glass is omitted.

## Fancy Frames

Fix in the frame with a few picture frame brads or sprigs and cover the joint between frame backing and frame, with brown paper, glued over, to keep any dust from working through. A simple pediment can be added to the frame, as shown in the illustration, if liked (it is quite optional), and the frame suspended with gilt picture wire or chain.

Readers who do not care particularly for the conventional work of frame-making, and it is no easy matter without cramps and a reliable mitre block, can make up themselves an equally suitable frame without bothering about troublesome mitres.

The right-hand example, in Fig. 1, shows such a frame, the top and bottom of which are fixed to the sides with a stub mortise and tenon joint, as at (D). A slip of shallow half-round moulding is glued and pinned round the opening, and overlaps it, as in detail (E), to make the rebate for the glass and frame.

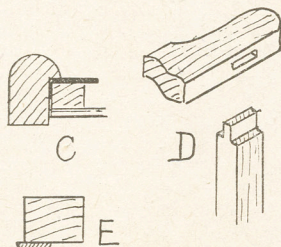


Fig. 5—Rebate and joint details



# A novelty type ship is easily made as a CRUISER CIGARETTE BOX

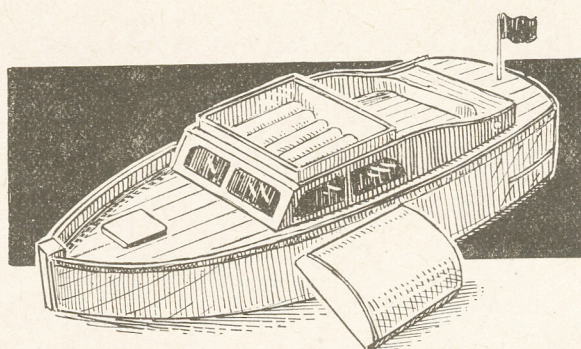
At one time or the other, cigarette boxes have been designed in all manner of possible and impossible forms; inside model grand pianos, aeroplanes, and the like. Here is a box, however, that is not only novel in form, but reasonably logical. Inside the cabin of a water-line model of a cabin-cruiser we find a 'cargo' of cigarettes.

As will be seen from the illustration, quite an attractive model results, and in planning this novelty, we have kept in mind the fact that it is primarily a cigarette box and not a scale-model of a cabin cruiser. Difficult curves of the hull, such as would be met with in the real boat have been avoided, and the deck levels much simplified to make for easy construction.

If, however, the reader is well 'up' in real or model boat building, and wishes to make a model that would not be out of place, say, in the home of an expert cabin-cruiser owner, he can use our simple model as a basis on which to make a more elaborate one.

## Full-size Patterns

The first thing to do is to prepare full-size paper patterns for the top and bottom decks (both alike). Actually, only one half of the design needs squaring off. A piece of paper is doubled the long way, and one half of the design drawn on it, the centre-line of the design being along the fold. The pattern is cut round with scissors. When opened, a perfectly symmetrical design will be



obtained, which can be transferred to the wood.

The top deck (A) is made from  $\frac{3}{16}$  in. plywood, and the bottom (B) from  $\frac{3}{16}$  in. solid wood. The top deck only has a  $3\frac{1}{2}$  in. long by  $3\frac{1}{4}$  in. wide hole cut in it. Unless you have a fretmachine, it is probable that both decks will have to be cut separately and after cutting they should be temporarily held together and, with a file, etc., made exactly alike in outline.

Front block (C) is next cut. It is a simple triangular piece, dimensioned as shown and is glued and pinned to the front of the lower deck. Piece (D) need not be shaped at first. It is cut from 1 in. thick wood,  $3\frac{1}{2}$  ins. long and  $\frac{5}{8}$  in. wide. It is fixed to the stern end of the lower deck, and when the glue has set, the block may be shaped to conform with the curve already at the end of the

deck. The upper deck may then be fitted, taking care that it is exactly over the lower deck.

Two pieces (E) are also fitted at this time. These are of 1 in. by  $\frac{3}{8}$  in. section, and can be cut  $4\frac{1}{2}$  ins. long. When in position, immediately inside the fore and aft ends of the square hole, the ends can be chiselled off. Work, at this stage, is illustrated in Fig. 3.

Before any more work is done, the upper deck should be sandedpapered quite smooth, all nail holes being stopped with plastic wood. Lines to represent planking can be scratched on with, say, a bradawl run along a metal rule, or they can be pencilled in. This is

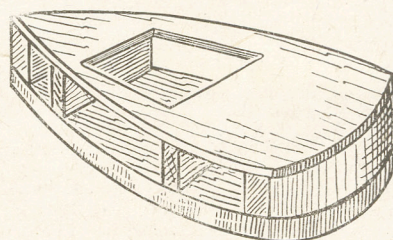
the last opportunity we have of working on a clear flat deck.

Two sides of the cabin (HH) are now made. They are of  $1\frac{1}{2}$  in. by  $\frac{1}{4}$  in. section and  $3\frac{1}{2}$  ins. long. That is, they fit exactly inside the opening in the top deck, and go flat against parts (E), to which they may be glued. Part (G) is of  $\frac{1}{4}$  in. plywood, shaped as shown, and glued to

the top deck  $\frac{1}{2}$  in. from the stern. Part (J) is a triangular fillet, of the section shown, and  $3\frac{1}{4}$  ins. long. It is glued on the front deck, right against the foremost of the (H) pieces.

## The Sides

Sides (K) are of thin plywood with the grain going the long way of the outside surface. The strips are cut  $\frac{3}{8}$  in. wide and just over 9 ins. long. They go from the front of the (J) piece to the rear of the (G) piece, forming another side for the cabin.



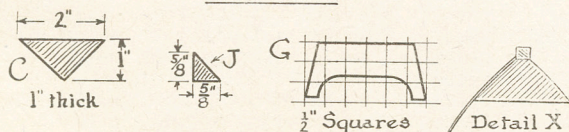
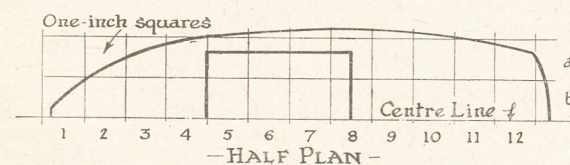
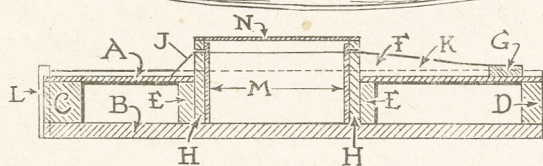
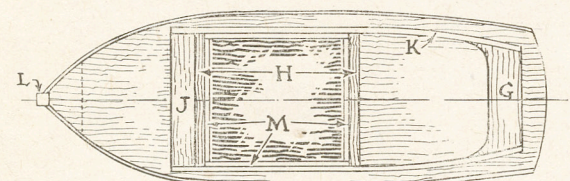
Showing general construction

When length has been checked, taper off the end and chop off a corner of the front so it goes neatly against the triangular fillet (J). This (K) piece is attached to parts (J), the two (E's and G). Very small panel pins are used as well as a spot of glue.

Ordinary pins can be used. They are driven in a reasonable way and then the rest is cut off with a pair of pliers, of the clawend type. The top of the (K) strips should be level with the tops of the (E) pieces.

## Lining

The box is now lined with pieces of  $\frac{1}{8}$  in. wood (M) solid or ply, which project  $\frac{1}{4}$  in. above the main cabin top so as to form a flange to enable the lid to sit on. There will be no difficulty in attaching one set of sides to pieces (E). Small packing pieces may be needed to take the other sides. During the gluing, etc., process, take great care to keep the inside of this box clean.



Details of the parts and (at top) plan of boat

(Continued foot of page 262)



# Having made the cinema you can undertake a HOME-MADE CINE SCREEN

**L**AST year a design was given in *Hobbies Weekly* for a home cine. For readers who have made this and others who possess a small cinematograph, here is a screen which gives a more brilliant picture than any other type. For it is of a translucent type, the picture being seen by transmitted and not reflected light.

In the ordinary screen the light from the projector strikes the surface and then is reflected back to the eye, and it depends how much light is absorbed by the material whether the picture is bright or dull.

## Translucent Material

With a translucent screen, however, the picture is projected from behind and the audience see it through the material just as you see the picture on the ground glass of your camera. Your size of picture need not be very great for a small room, and the screen shown here gives one of 2ft. by 1ft. 6ins.

The translucent material can be 'Celastoid' or some other form of plastic or engineer's tracing cloth. In both cases it has to be under tension to give the perfectly tight, flat surface that is so essential to all types of ciné projection for good results.

First, therefore, construct the frame. This is made up of two pieces (A) and (B), 2ft. 3ins. by 1½ins. and two side strips (C) and (D), 1ft. 9ins. by 1½ins. (both ½in. thick). Also required is the top front piece (E), 2ft. 3ins. by 1½ins. and (F), 2ft. 3ins. by 2½ins. and two side strips (G) and (H) which are 1ft. 6ins. by 1½ins. The frame is fitted together after making and putting in the screen.

## Tracing Cloth

For the latter is required a rectangle of either of the two above materials, 2ft. by 2ft. 2ins. The plastic is really the better material of the two, for while the tracing linen is quite good, there is a slight tendency to show the texture. If you are using tracing cloth, however, get some of the rough variety, this being better than the high gloss.

The screen is secured at both top and bottom to a length of very stiff dowel, the top length being 2ft. 2½ins. long and the lower 2ft. 2ins. There is 6ins. to spare in the vertical direction of the material, so 3ins. is wrapped tightly and evenly round each dowel where friction and a row of sprigs will hold it firmly in position.

## The Frame

Two holes are now made at (a) to take the ends of the top dowel and the frame is fitted together, the way this is done being clear from the diagrams. Top and bottom pieces fit over the side uprights and then everything is locked by the front strips which are held by a close series of short screws along their edges. Further strength is given by the four small angle irons (b) which can be bought at any chain store.

Now we come to the bottom. Here three small coil springs are fitted (obtainable at an ironmonger's). They are fastened permanently to the lower

dowel by binding with wire, but their lower ends slip over small hooks in the lower strip (i). Adjustment must be such that when on the hooks the screen is pulled to a nice even tension. When the screen is not in use the coils are released and either let them hang loose or they can be slipped over two long-necked hooks (d).

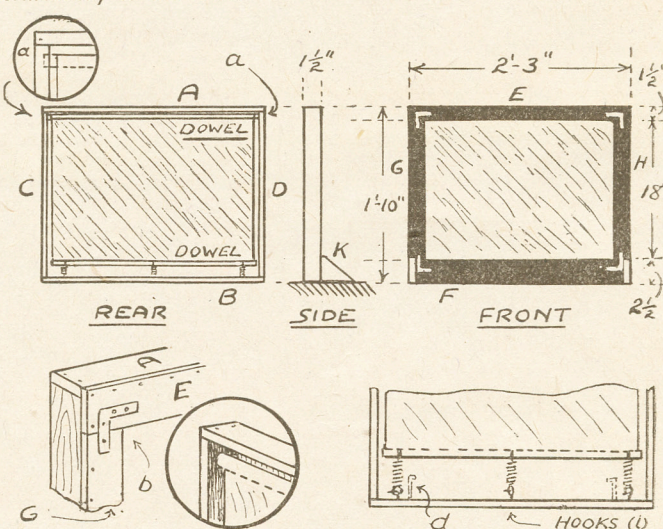
As far as the woodwork is concerned, we now only have to fit the feet (K).

These are triangular pieces of wood ½in. thick and held to the lower front by two small hinges each. The hinges are set with their pivots to the inner side so the triangle will turn inwards when the frame is packed away. Care must be taken to see that when the triangles are in the 'out' position the screen is perfectly upright.

## Painting

Last comes the painting. The inside of the frame must be given a coat of matt or 'drop' black, i.e., a non-reflecting black. The front face can be also black or deep blue. On no account must a light colour be used, as we want to present a border as sharply contrasting as possible to the illuminated picture, and a light colour does not do this.

It is interesting to note that as well as giving a more pleasing picture the translucent screen is useful because it allows a greater number of people sitting right in front of the picture, as



there is no space wasted by the projector or the necessary beam of light from it to the fabric.

## Cigarette Box—(Continued from page 261)

The post at the bow (L) is made from ½in. square stripwood, 1½ins. long. With one or two neat vertically downward strokes of a chisel, the pointed prow is flattened a little so that the post can be glued and nailed on. This done, the sides (M) can be fitted. These are of ¼in. plywood, with the grain running the short way of the strip, which is 1½ins. wide and approximately 13ins. long. They are cut oversize as regards length, as they can easily be trimmed off afterwards at the stern.

Fixing is started at the bow end (see detail (X)). There will be no difficulty in driving small panel pins into the thick-

ness of the lower deck (B) or the pieces (C), (E-E), and (D). If the two decks (A) and (B) are immediately over each other, it is not essential to drive pins into the thickness of (A), though one or two very small pins may be used. Glue will fill any small gaps.

The sides project ½in. above the deck level.

No detailed instructions need be given for the lid (N) (cabin top). To simplify construction, the top can be quite flat. Otherwise the ends are shallow D-shaped pieces and the curved top is either thin plywood or stiff card. Make sure that the lid is a decent fit.

As regards decoration, the deck can be left in natural colour and varnished. The sides can be white enamelled and the cabin sides done in a contrasting colour, say, green. The cabin windows are simply painted on as solid masses.

The sketch of the finished model suggests a few extra refinements such as a hatch cover at the front, some rubbing strakes, a flagstaff, etc. A few of such 'extras' give a finished touch to the model, but do not overdo them.

The interior of the cabin where the cigarettes are contained, is left in plain wood, given a coat of varnish.



## Home Cements for Handymen

### Leather to Iron Cement

Paint the iron first with a paint of white-lead and lamp-black, then soak good Scotch glue in cold water till soft, finally dissolving the glue in acetic acid or vinegar at a low heat. Then add one-third of the complete bulk of white spirits of turpentine, finally mixing thoroughly, and applying it to the painted iron whilst it is hot. Apply the leather quickly, and press into close contact until completely cold.

### Cements for Small Machine Belts

There are several recipes for leather cements for this purpose, but belt joints should never depend entirely upon them, but should be stitched as well.

Half a pint of hot Scotch glue mixed with a table-spoonful of glycerine and a tea-spoonful of spirit of turpentine is a good cement for leather, as is  $\frac{1}{2}$  lb. of raw rubber, 1 oz. of pitch, and 1 oz. each of shellac and sweet (olive) oil. The latter formula should be used hot.

Sheet gelatine dissolved in acetic acid or glue (liquid) to which enough tannin has been added to make it syrupy is also a good leather adhesive; whilst 20 parts of raw rubber, 2 parts of pitch, 1 part of shellac and 2 parts of raw linseed oil is yet another well-known formula.

### Amber Cement

A cement for repairing amber may be made by dissolving sufficient gum in ether or alcohol (ether by preference) to form a treacly fluid. The broken parts should be slightly heated, the cement very quickly applied, and the parts as speedily brought together and bound with string or wire. Any protruding excess may be scraped away quite easily with a really sharp knife.

### Steam Pipe Cement

Steam joints may be successfully made with the following mixture. 50 parts of finely ground graphite, 15 parts of ground chalk, mixed together and allowed to dry hard. When dry the mass should be reground and 15 parts of boiled linseed oil, together with 20 parts of litharge added, mixing to a stiff paste. This cement remains usable for a long time and is applied to the joints before screwing up tight.

### Cement for Steam Pipe Leaks

Leaks in steam pipes may be permanently sealed with a mixture of linseed oil and sufficient oxide of manganese to form a stodgy paste. Steam pressure should be removed or at least diminished during the operation, and the pipe surfaces at the leak kept hot. This cement sets very hard in about 24 hours.

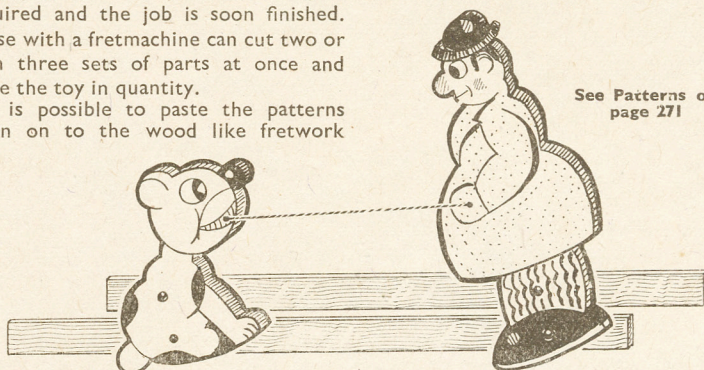
# A novel mechanical toy THE MAN AND PUP

ILLUSTRATED herewith is a grand old toy for which we give full-size patterns on page 271. Very little cutting is required and the job is soon finished. Those with a fretmachine can cut two or even three sets of parts at once and make the toy in quantity.

It is possible to paste the patterns down on to the wood like fretwork

The back and edges are to be blacked. This is best done first.

The two strips can be of ready-



See Patterns on  
page 271

patterns, but this is not recommended. It is better to trace off the patterns so the printed copy is left intact for reference as to the markings of the features, etc.

### Three Methods for Patterns

Three methods suggest themselves: (a) lay the printed copy over suitable scraps of clean wood and trace through, using a sheet of carbon paper, (b) make a tracing, on tracing paper, and then trace down on to the wood. This method is particularly suitable when odd scraps of waste wood, off-cuts, etc., are being used. (c) Make cardboard templates that can be pencilled round. This is particularly suited where the toy is being made in quantity.

Plywood  $\frac{3}{16}$  in. thick is suitable with the outside grain going the long way of the figures. Note particularly that only the outline is cut. The man's arm, for example, is just painted on afterwards and so is the space to the left of the pup's extended foreleg. Do not forget to drill small holes where shown. The actual diameter of these depends on the size of the split pins being used.

### Painting the Parts

The parts are best painted before being assembled, but only the simplest and boldest of colouring is needed. The pup could be white, but this would soon show the dirt. Black in large areas is very unsuitable on children's toys. Suppose we have a light fawn body for the pup with dark brown patches. The nose, of course, is black.

The man's hat is dark brown. The face is pink, made by mixing a little red with white and yellow. The coat can rival Joseph's in brilliant colouring. Never forget that though, in actual fact, a man's coat is usually in a sombre colour, children like bright colours and a bright green overcoat and dark green trousers would not be out of place. The shoes are dark brown. The painting is done in bright enamels on the face side.

prepared stripwood or cut from plywood  $\frac{1}{2}$  in. or so wide. On the pattern sheet, the two figures are shown rather close together for economy in space, but they are shown better spaced in the drawing that heads this article. Actually, the length of the strips is immaterial to the working but there is no point in making them excessively long.

Holes are drilled in these strips to correspond with the holes in the figures. The pattern sheet will show the lay-out. The space between the strips need not and should not be very great.

### Assembling the Parts

The parts are assembled with split pins which can be obtained from any good ironmonger. They are somewhat similar to brass paper-fasteners but, of course, more pin-shaped. Whilst you are getting these, get some small washers to match. Put a washer between the strips and the figures, and another under the head of the split pin. Another washer should be put on before the ends of the split pin are turned over. If this is done, the figures will work without stiffness.

Note that the right-hand end of the upper strip and the left-hand end of the lower strip project a bit more than their counterparts. It is these two strips that are taken in either hand and pushed too and fro. When this is done, the figures rock from side to side.

### Tug-of-War

A piece of string is inserted through a hole drilled in the man's hand and taken across to a similar hole drilled in the dog's teeth. When the toy is worked, a most realistic tug-of-war takes place between the man and his pup.

There can be few, if any, readers of *Hobbies Weekly* who have not, at one time or the other, had a frisky puppy straining on the end of a lead, and most children for whom the toy is intended will see the point, too.



# Learn the art and amuse your friends with CHAPEAUGRAPHY

**T**HE word Chapeaugraphy comes from the French—Chapeau meaning hat, and the Greek Graphos meaning to write or record. The art of Chapeaugraphy, therefore, is the ability to depict various kinds of hats. Besides being instructive a considerable amount of amusement can be obtained by practising it.

It is believed that a Frenchman introduced the art about 200 years ago, and although it was very popular until early this century, very little is seen of it now. This is rather surprising as it is not a difficult art to perform and with a little practise considerable skill is soon acquired.

## A Felt Ring

The only piece of apparatus really necessary is the chapeau or ring as it is sometimes called. The idea is to portray different characters or types of people by folding the ring and thus forming different kinds of hats.

The ring is made from a piece of fairly thick black or dark coloured felt about 20ins. in diameter. A circle is cut out of the centre having a diameter of 7ins., leaving a ring of felt 6½ins. wide. This must be made quite pliable by rubbing.

Some chapeaugraphists use various accessories besides the ring for their act, such as a cloak to throw over their shoulders, spectacles and moustache, a coloured handkerchief and a stick to name but a few. Other performers are content to use the chapeau only, and to rely on facial expression to depict their characters.

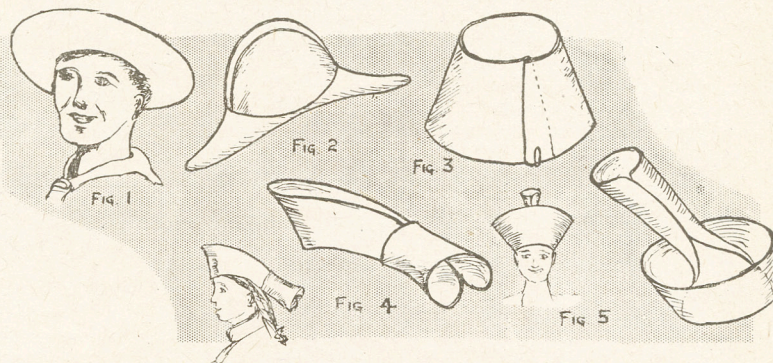
Now let the show begin. The first figure is quite an easy one and requires no folding, just put the ring over the back of the head and you have the Cowboy Sombrero (Fig. 1). A handkerchief tied round the neck and a length of

rope will add a little colour to the scene.

Napoleon (Fig. 2) is also quite easy. Take hold of the ring by opposite edges and push through the centre, pulling one a little further than the other. Turn your coat collar up and push one hand

and a cane and, perhaps, a pair of spectacles, having them on the tip of the nose to look over the top of them.

The next hat is that of a soldier of about 200 years ago. To make it, take one edge of the ring and pull it through



into your buttoned-up coat. Also wear a somewhat sour expression.

An Admiral, or the Duke of Wellington, can be done with the same hat, but do not push the pieces through quite so far. And wear the hat with the points to the front and back instead of sideways.

## More Shapes

The Turk's cap (Fig. 3) is very simple. First fold the felt ring in half then form a roll and clip the two ends together. When putting this hat on be sure that the clip is at the back.

The Mortar Board of the Schoolmaster is made up the same as the one for Napoleon. The sides are not pulled so far through the centre. The hat is worn the reverse way to Fig. 2, with the board on top, which should be flattened as much as possible. A little more realism can be given to this one by having a book

the centre. This is called a half twist, and in this state it forms another hat which was worn by the old fashioned Beadle. Now by continuing the half twist you will form a full twist, and the felt will fall into position making the hat as shown (Fig. 4). It is worn with the tail part behind.

## Priest and Chinese

By turning the hat round and having the tail part over the front of the head we have yet another character—the Village Priest of France.

The Chinese hat shown (Fig. 5) is a little more difficult to make. First fold the ring as in Fig. 4 for the soldier. With one hand hold the end with two rolls, then with the other hand turn the outside edge of the brim up and the inside edge down. Do not let the 'pigtail' part stick up too high.

By a slight adjustment of this last hat another character is easily made—that of a Spanish Bull Fighter or Toreador. The brim needs to be only half the width of Fig. 5, and to do this the bottom of the brim is rolled in into the centre hole.

## Individual Efforts

The hats just described are only a few of the large number that it is possible to make with the ring of felt. Only a little experimenting is necessary in order to create some new and very striking creations, the presentation of which will give endless fun to yourself and to your friends.

When you get expert a splendid little show could be arranged and you might often be able to assist at concerts.

Many of our lady friends would be thrilled with some of the striking designs for hats that it is possible to create with the aid of a simple ring of felt. It is even probable that you might evolve a new design.

## A Miniature

## Model Mine



Nottingham Guardian Photograph

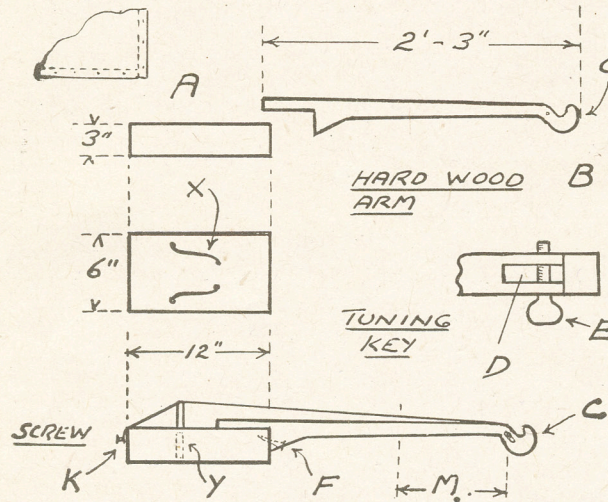
**W**HO says boys have not patience to do little things neatly and realistically? Look at this. A tiny model of the surface workings of a coal mine, based on the layout of Welbeck Colliery was made by the two lads you see—K. Lilley (on the right) and D. Truman in whose home district of Nottinghamshire the pit is situated.



# Learn to entertain yourself by making a ONE-STRING FIDDLE

THE making of a one-stringed fiddle is quite a practical proposition. Indeed, with care an instrument can be turned out which will not offend the most musically-minded. An official bow, of course, must be bought, as these cannot be made by the amateur. The string, too, must be obtained from a music shop—this being of the ordinary violin variety.

Now with regard to the constructional part. First we require a thin wooden box (A), 12ins. by 6ins. and 3ins. deep. Cigar box wood is ideal for this, but it is hard to obtain nowadays, so the box may have to be built from six sections of whatever material you can get. The two end pieces must be  $\frac{1}{2}$ in. thick, to which the top, base and side are fastened by fine screws.



The sides can be a shade thinner than the ends, and the base and top should be as thin as possible compatible with sufficient strength— $\frac{5}{32}$ in. material will do quite well. The great aim is to make a solid well-knit box, and, to help this, top and bottom pieces are glued before being put in position, and then a series of very fine model-makers spikes ( $\frac{5}{16}$ in. long) are put through the edge of these pieces into the sides.

## The Bridge

Model-makers spikes can be pushed home and if they are carefully inserted there is not the least danger of splitting, although one is working to such very fine limits. Before finally putting on the top, however, cut the two small holes (X) and fit the bridge. Also the small piece of wood (Y) that goes under the bridge to the base. This is only a strut,  $\frac{1}{4}$ in. section and is held by a sprig from below and glue.

The bridge is a piece of  $\frac{3}{16}$ in. material of 2in. height and about 3ins. wide. It is

eventually held in position by the string, and all that is needed is some fastening at its base to prevent it 'skidding' away as the string is tightened, or being lost when a string breaks or is being changed.

To effect this the lower end of the bridge is glued and then a series of the spikes pushed up through the top into its lower edge. This makes everything quite firm.

## The Main Arm

The idea of the sound holes in the top is to allow of free exit of the sound vibrations set up inside the box—thus improving the tone.

The main arm (B) is 2ft. 3ins. long and is shaped out of hard wood to as near the pattern given as possible. It must, however, go smaller towards the top and have the lower end shaped, as indicated,

to fit over the 'sound box'. If the top end can be shaped as (C) so much the better, as this makes comfortable holding and gives a more official finish. Of course, standard violins are like this. In any case the channel (D) must be taken out with a sharp chisel to allow for the tuning and string-tightening arrangement.

The channel taken out, prepare the hard wood key (E). A

piece of beech or mahogany should be used for this, as it has to stand up to a fair amount of strain. Note that the key is not of constant diameter but gets smaller towards the end furthest from the finger grip. It is finished with a small hole to take the end of the string.

To complete this part of the instrument, two holes are bored in the side of the channel (D) into which the key will

just fit. As the key is slightly truncated, the hole on one side need not be quite as big as the other.

In action the key is turned, so making the string taut and the position is set by merely pushing the key further home, which gives it a marvellously tight grip by friction alone.

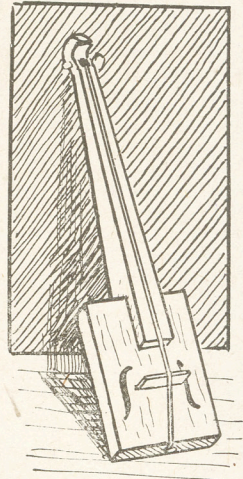
The arm is now fitted to the box by a single screw at (F) taken in at an angle. Also by two smaller screws through (H). Actually the one big screw at (F) is sufficient, as the tension on the string tends to pull the arm up and jam the extension (H) tighter against the top of the box.

Before putting on the string, the instrument should be stained and polished, as this will give it a nicely finished appearance. A screw is now inserted at (K) and the string (which has been obtained from a music shop) firmly attached. It is then carried on up over the bridge and through the hole in the key. Several turns anchor it well here and then final tuning up can be carried out.

## Playing

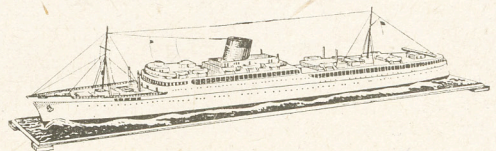
Nothing has been said about the actual playing of the fiddle as it is assumed that you will have some musical knowledge. The sound is produced by drawing the bow across the taut string and the pitch of the note is altered by pressing on the string at various points along the area (M), thus varying the effective vibration length. It is by these variations that the music is produced.

They may sound awful at first, but practice will produce results.



## Waterline Model 'Pretoria Castle'

The specially enlarged design sheet given with this issue is for patterns of a 15in. model of the latest P. and O. Liner. Complete Kit of parts (No. 241 Special) obtainable from Hobbies Branches for 3/6 or sent post free for 4/3 from Hobbies Ltd., Dereham, Norfolk.





# How the handyman with a gramophone can undertake REPAIRING A SOUNDBOX

**W**HEN a gramophone squeaks and wheezes or fails to sound the top notes or low bass correctly the cause can nearly always be traced to the soundbox. We will assume that the motor is in perfect running order, and any handyman should be sufficiently expert to be able to keep this part of the machinery in trim by an occasional oiling and adjustment. It is, however, something of an expert's job to set up and adjust a soundbox, but it is an art which can be learned.

There are numerous types of soundboxes to be found today, but once you understand a few of the fundamental principles you will be capable of undertaking any type of job, and should be able to earn quite a nice income by doing the work.

## A Typical Box

Let us first inspect a soundbox to see how it is built. Fig. 1 shows the section of an average type of box and gives a good idea of its construction.

The case, which is made of metal should not be too light in weight, nor should it be excessively heavy. In the first place the needle would not run smoothly in the record grooves and will produce a chatter, while if the box is

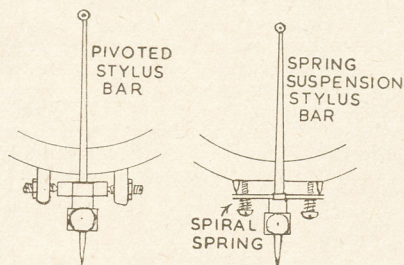


Fig. 2—A good type bar

Fig. 3—The old type stylus

very heavy the needle will tear out the grooves and soon wear the record away.

The diaphragm, which is now made either of metal or mica is held firmly in position by two rings of rubber called gaskets. The diaphragm must be a little smaller than the case in order not to touch the sides anywhere. About one millimetre all round is enough space. The two gaskets are pieces of soft rubber tubing fitting snugly round the sides of the case and pressing together sufficiently to hold the diaphragm tight between them.

## Stylus Bars

Stylus bars have been made in a variety of ways, but, undoubtedly, the best is that having two pointed pivots working in cup screws. When this type is correctly adjusted there is no strain on the diaphragm and it is free to vibrate with perfect ease (see Fig. 2).

The old stylus bar (see Fig. 3) with its

spring suspension in various forms was very bad unless very carefully adjusted, and even then it was far from perfect.

When a soundbox fails to reproduce the sounds as it should, the first place to look for trouble is the diaphragm. This is very easily damaged, especially the metal ones, and great care should always be used when handling a soundbox. A knock is sufficient to do serious damage.

Remember also when letting the soundbox down on to a record to do this gently—the diaphragm is less liable to get buckled and the records will wear longer.

Diaphragms often break away from the centre fixing to the stylus bar; the only cure is to fit a new one, which can be obtained from a music dealer. Do not attempt to cut one out yourself, as it will most certainly end in failure. Diaphragms are not so expensive and it is an expert's job to make them.

From a musical point of view there is nothing to beat a good mica disc carefully adjusted. The reproduction is much more mellow and sweeter than from a metal diaphragm which is inclined to be very harsh on some notes. There is greater volume to be obtained by fitting a metal one, but this advantage is easily outweighed by the greater purity of a mica one.

## Fitting a Diaphragm

In fitting a new diaphragm, first see that the gaskets are nicely soft. They should also be quite round so the centre hole is not blocked up. The old ones have most likely gone hard and are useless. New ones can be bought from a music dealer quite cheaply. Buy them a little longer than wanted, so they can be cut to fit snugly in the case—not too tight to buckle, but with the ends just touching.

Drop them in hot water for about a minute, wipe dry and blow the water out of the centre hole. Having put the lower one round the inside of the case, carefully place the diaphragm on top of it, making sure it does not touch the edges of the case. Then coil the other gasket round the case and screw on the ring.

It may be a soundbox that has no detachable cover ring—in which case the top gasket is just tucked underneath the flange, but be very careful not to shift the diaphragm in doing so.

The next job is to get the stylus bar fitted and adjusted correctly. This is extremely important. The most common types now are pivoted in cup screws—these should be tightened up so there is no end shake whatever. Then swing the bar over and see that the screw corresponds exactly with the centre hole in the diaphragm; if not, carefully bend until it fits exactly, then screw it up securely.

## Sealing Wax Fastening

This fastening is not sufficient alone as the constant vibration that it receives might loosen the screw. It is, therefore, waxed as well, and a good hard beeswax will do for this. Cut a few very small pieces and place them round the screw, then with a heated piece of wire touch them lightly and the wax will run all round. Do this on both sides of the diaphragm.

Another type of soundbox that was very popular but is now giving way to

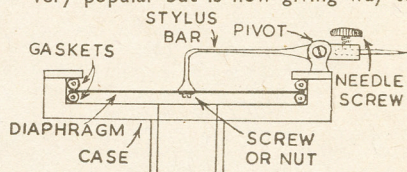


Fig. 1—Sectional diagram of soundbox

the superior pivoted type had its stylus bar suspended on springs. The fitting of a new diaphragm is carried out much as before.

As the stylus bar cannot be swung over it must be unscrewed to fit the diaphragm, after which it is screwed back in position. Give the two screws the same number of turns, because the tension of the two springs must be equal. The stylus bar must also lay on the diaphragm, just touching it and lining up with the centre hole. Then screw up and wax as before.

## Testing

An expert tests the sound box by giving it a light tap with the finger nail on the needle screw. This should give a rich mellow 'plonk' if all is well. Should it rattle or if there is a cracked sound, there is a screw or something loose, or there may be an air leak somewhere.

It is very important that everything should be tight, the diaphragm flat and free from flaws, the centre nicely waxed, the gaskets pliable and tucked in snugly and the stylus bar screwed up securely. If you can give the O.K. to all these points you will have done a first-class job.

## Plaster of Paris Hardening

**P**LASTER of paris can be increased in hardness by the addition of substances such as Portland cement, provided a slightly increased roughness is not objected to. Gelatine dissolved in water and used in the same way as plain water, has a hardening or toughening effect. The plaster can be surface hardened by metal spraying, and to a lesser degree by several coats of shellac varnish.



# The Gothic style can be introduced into this CHURCH NOTICE BOARD

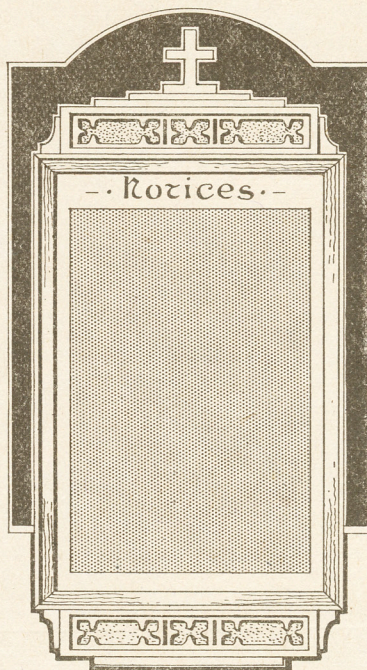
**H**ERE is a useful form of notice board, suitable for the church porch, vestry or club room. Any handyman with the ordinary kit of tools could make it and feel proud of the job. Doubtless, too, he would receive the gratitude of the Church Council or the kindly acceptance of the club for which the board is made.

The size of the board shown here, without the top and bottom ornamented rails is  $24\frac{1}{2}$  ins. by  $16\frac{1}{2}$  ins., but there is no need to abide by these figures. The board could well be a few inches larger or smaller each way without appreciably altering its actual design.

## Without Decoration

A note here regarding the decorative rails. The Gothic feature introduced here could be omitted if desired and the rails left plain. The fretted overlays could also be omitted in the two places. The illustration of the finished board shows it as essentially for a church. By omitting the cross and the fretted panels just referred to, it would be suitable for a Scout or any other Club.

If it is desired to have the name of the club displayed at all, then this could be either carved in relief or simply painted in on the top panel to take the place of the Gothic fretted panel. Another suggestion, too. It sometimes happens that the donor's name, with certain dates and particulars, is desired on the board. This then could be included on the lower panel, again omitting the fretted work here. If the board has been



made up in oak, and we know of no more suitable wood, then the painting might well be carried out in black matt paint or in gold lettering.

The board is made in three distinct units—the frame and its board, the top and bottom additional rails. The dimensions of each part are given for easy reference.

## The Framework

The middle part of the board will be the first item to make. It consists of an open frame made of four pieces halved together, as shown in Fig. 2. The general dimensions are given in Fig. 1. The wood for this frame might be deal  $1\frac{1}{2}$  ins. wide and  $\frac{1}{2}$  in. or  $\frac{3}{4}$  in. in thickness. Mark off the halvings carefully and cut them down with a tenon saw, cleaning out the waste wood with a chisel.

Note, too, how the middle stiffening

rail is 'let in' by halving. The two recesses in the top and lower rails are to be 1 in. wide and  $\frac{1}{2}$  in. deep and are intended to take the short rails holding the wide top and lower rails to the frame (see Figs. 3 and 4). Glue the halvings of the frame together and before putting in the fixing screws, test the angles with a square.

## The Centre Panel

Cover the frame with a panel of  $\frac{3}{8}$  in. or  $\frac{1}{2}$  in. plywood or fibreboard, the latter answers quite well as the whole surface should afterwards be covered with baize. The holes for the screws for the fixing of the plywood or other board to the frame should not be more than  $\frac{3}{8}$  in. in from the edges, and should be counter-sunk so the cover strips which are put on later lie flat and close to the plywood surface.

## Edging Strips

Next prepare the four edging strips from 1 in. by  $\frac{1}{2}$  in. stuff, and mitre the corners neatly before screwing them on with the  $\frac{1}{2}$  in. round-headed screws. When these are on, stretch the baize and tack it on. Then add the cover strips which must be neatly mitred at the corners.

Take careful measurements first before cutting the mitres with the fretsaw. Glue the strips well up to the edging pieces and put in one or two brass fret pins to make all secure. Before leaving the frame to proceed with the other parts, complete the recess for the short upright rails by cutting away the edging strips at these parts, as shown in the enlarged detail at Fig. 4.

The wide top and bottom cross rails measure  $13\frac{1}{2}$  ins. long by  $2\frac{1}{2}$  ins. wide by  $\frac{1}{2}$  in. thick, and each is fixed to the short rails by screws as shown and with glue also where they meet the edging strips. The small shaped bracket-like ends are cut from  $\frac{3}{8}$  in. stuff and glued in the angles. The top rail and the lower rail are identical in design and make up. To the top rail, however, the additional two strips and the cross are added while on the lower, one strip only is

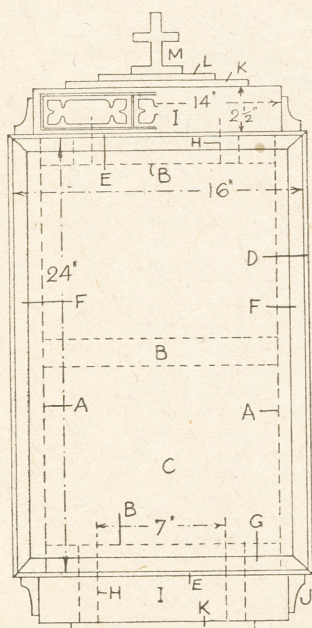


Fig. 1—Details of back and parts

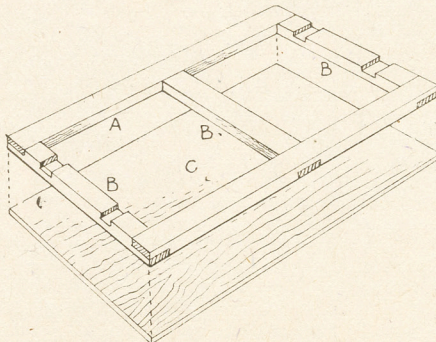


Fig. 2—Frame and backing

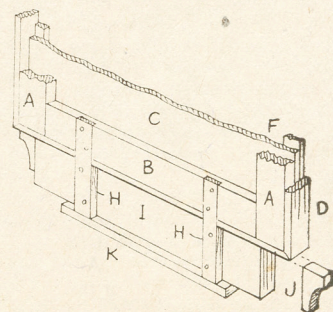
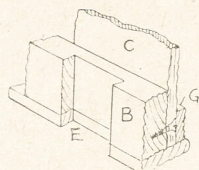


Fig. 3—Lower hanging panel part



The cross is cut out with the fretsaw from  $\frac{1}{2}$  in. stuff measuring 3 $\frac{1}{2}$  ins. by 2 $\frac{1}{4}$  ins. and fixed with glue and a single dowel pin, perhaps, to the strip (L). This in turn is screwed each side to the top of strip (K)—the latter is glued and screwed to the frame edging.



Technical drawing of a mechanical part, likely a bracket or support, showing top and side views with dimensions.

**Top View Dimensions:**

- Overall width:  $5\frac{1}{2}$ "
- Overall height:  $2\frac{1}{2}$ "
- Leftmost section width:  $\frac{1}{2}$ "
- First vertical slot width:  $\frac{3}{8}$ "
- Distance between first and second vertical slots:  $1\frac{1}{2}$ "
- Second vertical slot width:  $\frac{1}{8}$ "
- Distance between second and third vertical slots:  $2\frac{1}{2}$ "
- Third vertical slot width:  $\frac{1}{8}$ "
- Distance between third and fourth vertical slots:  $1\frac{1}{2}$ "
- Fourth vertical slot width:  $\frac{1}{8}$ "
- Distance between fourth and fifth vertical slots:  $1\frac{1}{2}$ "
- Fifth vertical slot width:  $\frac{1}{8}$ "
- Distance between fifth and sixth vertical slots:  $1\frac{1}{2}$ "
- Sixth vertical slot width:  $\frac{1}{8}$ "
- Distance between sixth and seventh vertical slots:  $1\frac{1}{2}$ "
- Seventh vertical slot width:  $\frac{1}{8}$ "
- Distance between seventh and eighth vertical slots:  $1\frac{1}{2}$ "
- Eighth vertical slot width:  $\frac{1}{8}$ "
- Distance between eighth and ninth vertical slots:  $1\frac{1}{2}$ "
- Ninth vertical slot width:  $\frac{1}{8}$ "
- Distance between ninth and tenth vertical slots:  $1\frac{1}{2}$ "
- Tenth vertical slot width:  $\frac{1}{8}$ "
- Distance between tenth and eleventh vertical slots:  $1\frac{1}{2}$ "
- Eleventh vertical slot width:  $\frac{1}{8}$ "
- Distance between eleventh and twelfth vertical slots:  $1\frac{1}{2}$ "
- Twelfth vertical slot width:  $\frac{1}{8}$ "
- Distance between twelfth and thirteenth vertical slots:  $1\frac{1}{2}$ "
- Thirteenth vertical slot width:  $\frac{1}{8}$ "
- Distance between thirteenth and fourteenth vertical slots:  $1\frac{1}{2}$ "
- Fourteenth vertical slot width:  $\frac{1}{8}$ "
- Distance between fourteenth and fifteenth vertical slots:  $1\frac{1}{2}$ "
- Fifteenth vertical slot width:  $\frac{1}{8}$ "
- Distance between fifteenth and sixteenth vertical slots:  $1\frac{1}{2}$ "
- Sixteenth vertical slot width:  $\frac{1}{8}$ "
- Distance between sixteenth and seventeenth vertical slots:  $1\frac{1}{2}$ "
- Seventeenth vertical slot width:  $\frac{1}{8}$ "
- Distance between seventeenth and eighteenth vertical slots:  $1\frac{1}{2}$ "
- Eighteenth vertical slot width:  $\frac{1}{8}$ "
- Distance between eighteenth and nineteenth vertical slots:  $1\frac{1}{2}$ "
- Nineteenth vertical slot width:  $\frac{1}{8}$ "
- Distance between nineteenth and twentieth vertical slots:  $1\frac{1}{2}$ "
- Twentieth vertical slot width:  $\frac{1}{8}$ "
- Distance between twentieth and twenty-first vertical slots:  $1\frac{1}{2}$ "
- Twenty-first vertical slot width:  $\frac{1}{8}$ "
- Distance between twenty-first and twenty-second vertical slots:  $1\frac{1}{2}$ "
- Twenty-second vertical slot width:  $\frac{1}{8}$ "
- Distance between twenty-second and twenty-third vertical slots:  $1\frac{1}{2}$ "
- Twenty-third vertical slot width:  $\frac{1}{8}$ "
- Distance between twenty-third and twenty-fourth vertical slots:  $1\frac{1}{2}$ "
- Twenty-fourth vertical slot width:  $\frac{1}{8}$ "
- Distance between twenty-fourth and twenty-fifth vertical slots:  $1\frac{1}{2}$ "
- Twenty-fifth vertical slot width:  $\frac{1}{8}$ "
- Distance between twenty-fifth and twenty-sixth vertical slots:  $1\frac{1}{2}$ "
- Twenty-sixth vertical slot width:  $\frac{1}{8}$ "
- Distance between twenty-sixth and twenty-seventh vertical slots:  $1\frac{1}{2}$ "
- Twenty-seventh vertical slot width:  $\frac{1}{8}$ "
- Distance between twenty-seventh and twenty-eighth vertical slots:  $1\frac{1}{2}$ "
- Twenty-eighth vertical slot width:  $\frac{1}{8}$ "
- Distance between twenty-eighth and twenty-ninth vertical slots:  $1\frac{1}{2}$ "
- Twenty-ninth vertical slot width:  $\frac{1}{8}$ "
- Distance between twenty-ninth and thirtieth vertical slots:  $1\frac{1}{2}$ "
- Thirtieth vertical slot width:  $\frac{1}{8}$ "
- Distance between thirtieth and thirty-first vertical slots:  $1\frac{1}{2}$ "
- Thirty-first vertical slot width:  $\frac{1}{8}$ "
- Distance between thirty-first and thirty-second vertical slots:  $1\frac{1}{2}$ "
- Thirty-second vertical slot width:  $\frac{1}{8}$ "
- Distance between thirty-second and thirty-third vertical slots:  $1\frac{1}{2}$ "
- Thirty-third vertical slot width:  $\frac{1}{8}$ "
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- Distance between thirty-sixth and thirty-seventh vertical slots:  $1\frac{1}{2}$ "
- Thirty-seventh vertical slot width:  $\frac{1}{8}$ "
- Distance between thirty-seventh and thirty-eighth vertical slots:  $1\frac{1}{2}$ "
- Thirty-eighth vertical slot width:  $\frac{1}{8}$ "
- Distance between thirty-eighth and thirty-ninth vertical slots:  $1\frac{1}{2}$ "
- Thirty-ninth vertical slot width:  $\frac{1}{8}$ "
- Distance between thirty-ninth and fortieth vertical slots:  $1\frac{1}{2}$ "
- Fortieth vertical slot width:  $\frac{1}{8}$ "
- Distance between fortieth and forty-first vertical slots:  $1\frac{1}{2}$ "
- Forty-first vertical slot width:  $\frac{1}{8}$ "
- Distance between forty-first and forty-second vertical slots:  $1\frac{1}{2}$ "
- Forty-second vertical slot width:  $\frac{1}{8}$ "
- Distance between forty-second and forty-third vertical slots:  $1\frac{1}{2}$ "
- Forty-third vertical slot width:  $\frac{1}{8}$ "
- Distance between forty-third and forty-fourth vertical slots:  $1\frac{1}{2}$ "
- Forty-fourth vertical slot width:  $\frac{1}{8}$ "
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- Distance between forty-ninth and fiftieth vertical slots:  $1\frac{1}{2}$ "
- Fiftieth vertical slot width:  $\frac{1}{8}$ "
- Distance between fiftieth and fifty-first vertical slots:  $1\frac{1}{2}$ "
- Fifty-first vertical slot width:  $\frac{1}{8}$ "
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- Distance between fifty-ninth and sixtieth vertical slots:  $1\frac{1}{2}$ "
- Sixtieth vertical slot width:  $\frac{1}{8}$ "
- Distance between sixtieth and sixty-first vertical slots:  $1\frac{1}{2}$ "
- Sixty-first vertical slot width:  $\frac{1}{8}$ "
- Distance between sixty-first and sixty-second vertical slots:  $1\frac{1}{2}$ "
- Sixty-second vertical slot width:  $\frac{1}{8}$ "
- Distance between sixty-second and sixty-third vertical slots:  $1\frac{1}{2}$ "
- Sixty-third vertical slot width:  $\frac{1}{8}$ "
- Distance between sixty-third and sixty-fourth vertical slots:  $1\frac{1}{2}$ "
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- Seventy-first vertical slot width:  $\frac{1}{8}$ "
- Distance between seventy-first and seventy-second vertical slots:  $1\frac{1}{2}$ "
- Seventy-second vertical slot width:  $\frac{1}{8}$ "
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- Seventy-third vertical slot width:  $\frac{1}{8}$ "
- Distance between seventy-third and seventy-fourth vertical slots:  $1\frac{1}{2}$ "
- Seventy-fourth vertical slot width:  $\frac{1}{8}$ "
- Distance between seventy-fourth and seventy-fifth vertical slots:  $1\frac{1}{2}$ "
- Seventy

The fretted overlay of Gothic design is made up in two layers. First there is a layer of  $\frac{1}{8}$  in. thick wood cut to the outline of the panel (I). Pencilled on this is the fretted design marked in to the measurements given in Fig. 5.

the design to the other side of the centre line, shown dotted in our illustration. Use as fine a fretsaw as possible for the cutting of the two  $\frac{1}{8}$ in. panels. After a careful clean up, glue them to their respective panels, one at the top and one at the bottom. In cutting round the outline of the fretted panels keep well outside the line so that after they

are glued to their backing the slightly projecting edges may be cleaned away flush with the  $\frac{1}{2}$  in. thick panel (I) and a perfectly flat and even surface obtained.

Finally, as a kind of border to the fretted panels, cut and glue on four mitred strips to each, as seen in Fig. 5, and at the cross section at the right hand of this diagram. Take care in the

B-2 Rails—24ins. by 1 $\frac{1}{2}$ ins. by  $\frac{1}{2}$ in.  
 B-2 Rails—16ins. by 1 $\frac{1}{2}$ ins. by  $\frac{1}{2}$ in.  
 C-1 Panel—24ins. by 16ins. by  $\frac{1}{2}$ in. or  $\frac{1}{4}$ in.  
 D-2 Strips—24ins. by 1ins. by  $\frac{1}{2}$ in.  
 E-2 Strips—16ins. by 1ins. by  $\frac{1}{2}$ in.  
 F-2 Strips—24ins. by 3in. by  $\frac{1}{2}$ in.  
 G-2 Strips—16ins. by 3in. by  $\frac{1}{2}$ in.  
 H-4 Rails—4ins. by 1in. by  $\frac{1}{2}$ in.  
 I-2 Rails—13ins. by 2 $\frac{1}{2}$ ins. by  $\frac{1}{2}$ in.  
 J-4 Blocks—2ins. by 1in. by  $\frac{1}{2}$ in.  
 K-2 Strips—10ins. by 1in. by  $\frac{1}{2}$ in.  
 L-1 Strip—6ins. by 1in. by  $\frac{1}{2}$ in.  
 M-1 Cross—3ins. by 2 $\frac{1}{2}$ ins. by  $\frac{1}{2}$ in.  
 Overlay—one piece 13ins. by 2 $\frac{1}{2}$ ins. by  $\frac{1}{2}$ in. and one piece 13ins. by 2 $\frac{1}{2}$ ins. by  $\frac{1}{2}$ in.

If oak has been used for the notice board it should be given a brushing of light oak stain with a final rubbing of linseed oil or a wax polish. Two or even four brass hanging plates screwed on at the back of the frame should make a secure holding for the board.

**H**ERE are some hints about your good friends the cycle lamps. If buying a new battery lamp try and get one with as positively-acting switch as possible. And one which, through sturdy build, will be pretty weatherproof. Some battery lamps fail badly on these points.

Should a battery lamp refuse to light and the bulb and battery be known to be in order the cause may be one of four things, (1) a loose bulb, (2) front contact not touching the bulb, (3) top contact pressed too low down or (4) rust.

Rust can be a very subtle trouble, but if all the other points have been checked, the reason for non-lighting is sure to be this. The rust can be in the threads of the screw which acts as a switch on top, or under the lid, around the upper edge of the case. The screw may be cleared by working it up and down vigorously several times, after which a little (and it must be a little) oil is put in.

Rust round the upper lip of the case, and in the lid, must be glasspapered away, special attention being given to the extreme top of the rim. For a lamp to burn properly there must be a perfect contact between the case and lid, and lid and switch screw. The brass contacts of the battery do not rust but they may get greasy and so if you are having a good clean up give them a wipe—it will all help.

Dampness, if continued, is the great enemy of all batteries. So if your lamp has been out in a real soaking, it is always advisable to take out the battery and give it a wipe over. At the same time wipe out the inside of the case and the bulb end.

A good tip to keep a tubular rear lamp (battery type) free from rust, at the point where the back portion of the case rotates to switch on, is to slightly grease the threads and then cover the joint with a short length of rubber cut from an old inner tube. Quite a narrow piece will do and it will be found that the diameter of the tube is such that it just nicely holds by friction. The band, for that is what it really is, effectively keeps out all rain but it does not interfere with the end turning in the usual way. Rust on the threads is the main trouble with rear lights of the rotating case type. But this 'rubber band' idea is a sure preventative.

Never under-rate the efficaciousness of having the reflector, bulb and front glass perfectly clean. A dirty reflector can absorb much light while a brilliant one can almost double the illumination. Cleaning should be periodical and do not forget the bulb and front glass in your endeavours to get a good polish on the reflector.

Batteries always run longer when used intermittently. Thus a battery capable of giving, say, thirty hours of *continuous* light will burn comfortably for two periods of twenty hours each. The proportionate length of time increases according to the number of rest periods, so switch off whenever the lamp is not actually required.

Be sure that you know the right type of bulb for your lamp, as one that is of too low voltage will burn out at once. Bulbs sooner or later all burn out, for although it is very protracted normally, the light is given by a slow combustion of the filament. Older bulbs usually 'go' just after a new battery has been put in, so it is good to have a spare one handy at

such times. In fact you should always have a spare bulb somewhere about and many lamps supply a clip for one just inside the lid.

It is a deplorable fact but hundreds of cycle lamps are stolen every year. You can prevent losing yours, however, by *wiring* it on. A turn of fairly strong wire taken round the bracket and finished by twisting with a pair of pliers does the job well and the writer can point to one lamp at least saved by this simple expedient. If put on carefully the wire is quite inconspicuous. Rear lamps are not so readily removed and may be regarded as safe as they are.

Here is another hint about a battery front lamp—again to do with weather-proofing. If you have to be out with your machine in continuous drenches of rain it is quite a good idea to make a small mackintosh cover for the lamp. This need only be a rectangle of old rubberised material with a rough hem turned at the bottom in which there is a length of elastic.

And here are some final tips. When the 'finish' starts to chip off a lamp, paint over the bare patches immediately as this prevents rain from getting further under the enamel. If the spring under the screw switch loses resilience replace with a new one. Light coil springs can be readily made or can be bought, cutting to length if necessary.

Never force a bulb by twisting hard on the glass and never, never, use a screwdriver to get off a too stiff lid. Heat gently and the lid will soon come away, as the outer rim expands a little. Use a cloth to take off the top as even moderately warm tin is uncomfortable to hold.



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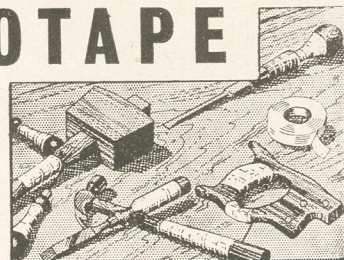
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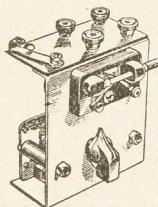
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## FRETWOOD PANELS

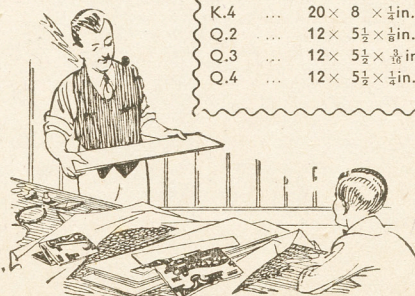
These Panels are of good quality boards planed both sides ready for use. They are supplied only in the size and thickness shown, and cannot be offered in any particular kind of wood. The handyman will find them useful for Hobbies designs and all kinds of home woodwork.

### NOTE

You can ask for the boards by the Reference Number only when ordering, and two or three can be sent for the same amount of postage.

### SIZES AND PRICES

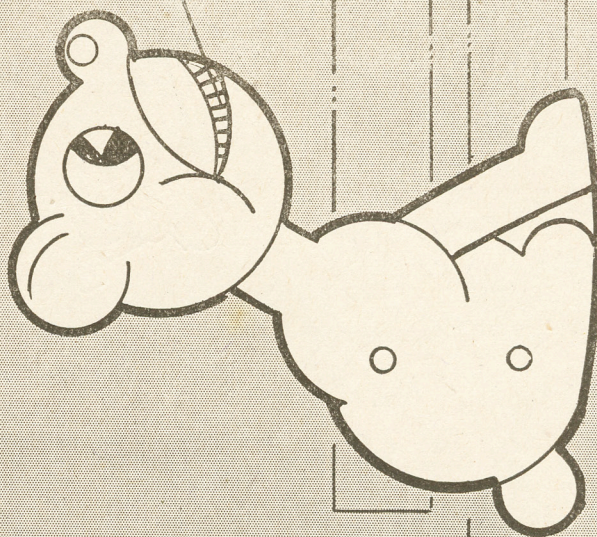
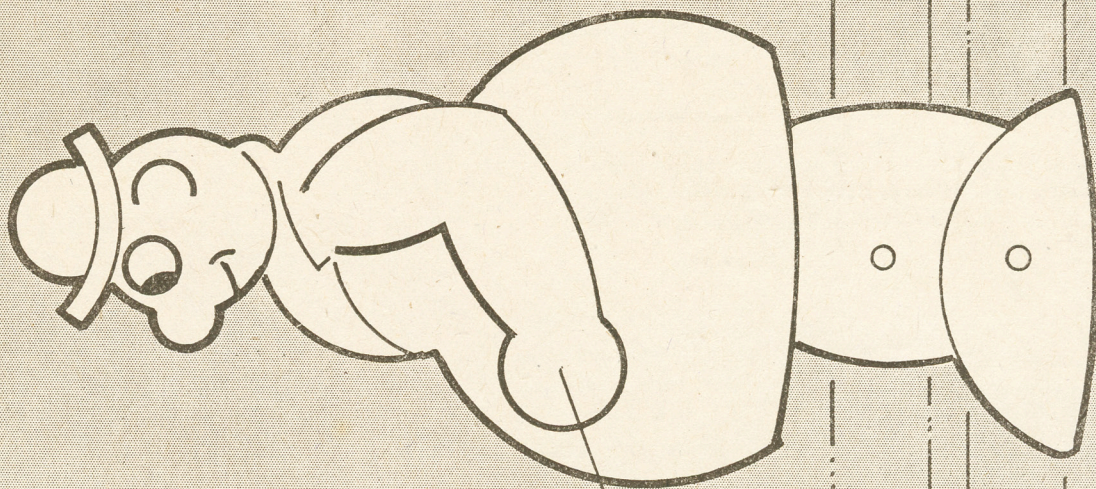
No.	Size.	Price.	Post
G.2	9 × 4 × 1/8 in.	5d.	3d.
G.3	9 × 4 × 1/8 in.	6d.	3d.
G.4	9 × 4 × 1/8 in.	7d.	3d.
H.2	14 × 7 × 1/8 in.	1/3	6d.
H.3	14 × 7 × 1/8 in.	1/5	6d.
H.4	14 × 7 × 1/8 in.	1/7	6d.
J.3	15 × 10 1/2 × 1/8 in.	2/4	9d.
J.4	15 × 10 1/2 × 1/8 in.	2/6	9d.
K.3	20 × 8 × 1/8 in.	2/5	9d.
K.4	20 × 8 × 1/8 in.	2/7	9d.
Q.2	12 × 5 1/2 × 1/8 in.	10d.	6d.
Q.3	12 × 5 1/2 × 1/8 in.	1/	6d.
Q.4	12 × 5 1/2 × 1/8 in.	1/1	6d.



From Hobbies Ltd., Dereham, Norfolk, or branches in London, Glasgow, Manchester, Sheffield, Leeds, Birmingham, Southampton, Bristol and Hull.



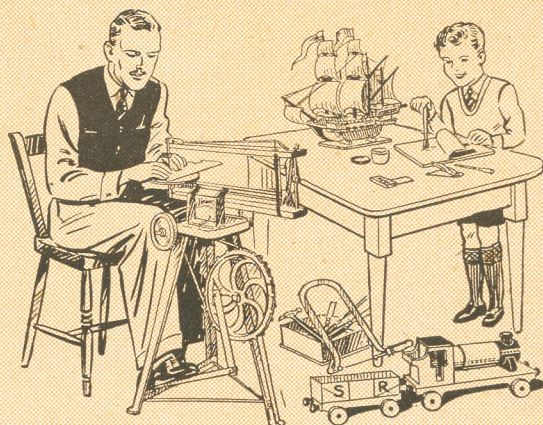
Full size Patterns for  
the Mechanical Toy  
shown on page 263



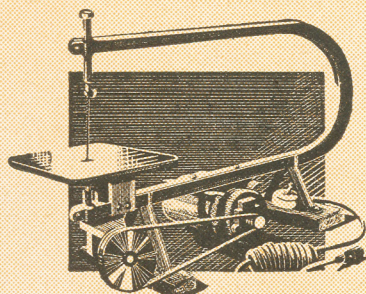


# Father and Son find Hobbies fun

The sawing machine for the handyman. For fretwork, furniture making, model making or a hundred-and-one odd carpentry jobs, this is what you want. You can save money and earn money in many ways, as well as get pleasure in your spare time. Profit and pleasure for your spare time. Suitable for cutting wood, composition board, sheet metal, leather, card, slate, etc. Imagine what you can do in your spare time, with the hundreds of Hobbies Kits to choose from.



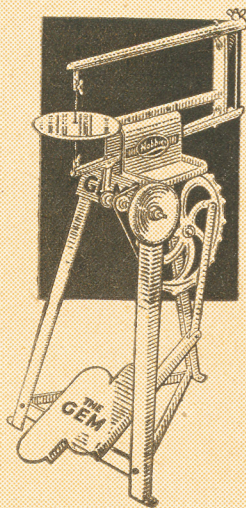
**LIGHT WOODWORK  
MODELMAKING  
FRETWORK  
TOYMAKING  
METALWORK  
LEATHERWORK**



## THE MARVEL MOTOR DRIVEN SAW

A sturdy bench fretsaw fitted with fractional AC/DC motor for running off the ordinary electric light circuit. Cuts wood to  $\frac{1}{2}$  in. thick by means of a strong spring-loaded saw action. There is a distance of 1ft. 5in. between sawblade and back of frame so large work can be undertaken. Vertical stroke, hardened steel parts, polished metal table, complete with motor, switch and flex with adaptor plug. Also supplied without motor for £3/10/0. **£10**

All these machines  
are made in  
Hobbies Factory



## THE GEM MACHINE

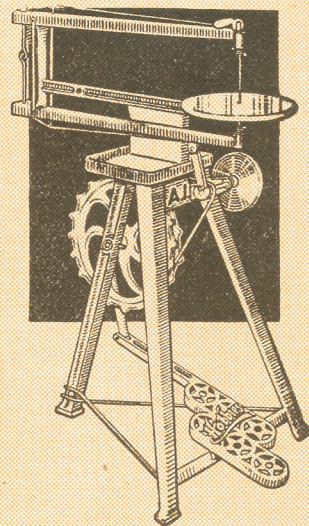
The length of the arm allows work up to 1ft. 6in. long to be manipulated with ease and pleasure. Built with all-steel frame for strength and rigidity, so the parts cannot get broken. The arms are U-shape, with large wing nut at the back for quick tension on the saw. The blade is held in special Hobbies clamps which grip securely. The treadling is easy and a large tray provides a holder for small tools. **£3 19 6**

## THE AI MACHINE

A strong rigid machine with cast metal legs, large table and a tray for small tools. The wooden arms are specially trussed to prevent warping and adjustments are practically universal. The back spring automatically raises the arm when a saw breaks. The Hobbies saw clamps hold the finest blade, and correct tension is easily obtained by the special lever action on the top arm. The table can be tilted for bevel cutting, and work up to 19in. behind the saw can be manipulated, **£6 6 0**

## CARRIAGE

Machines are forwarded by rail ready to use and 316 extra must be added for any part of Great Britain. Orders from anywhere in Ireland are under export rates.



All machines are well built, sturdy and of good material throughout. Spare sawblades, a design, and a 64-page book of instructions and suggestions are supplied with each. All machines are ready to use and spare parts are always available should they be required. Suitable designs, saws, wood and materials are available for whatever work is in hand. Treadling is soon learned and the machines run with ease and speed to make work a joy.

From leading Stores and Ironmongers everywhere. Hobbies Branches at 78 NEW OXFORD ST., W.C.1, 87 OLD BROAD ST., E.C.2, 117 WALWORTH RD., S.E.17, 326 ARGYLE ST., GLASGOW, 10 PICCADILLY, MANCHESTER, 14 BULL RING, BIRMINGHAM, 4 ST. PAUL'S PARADE, SHEFFIELD, 10 QUEEN VICTORIA ST., LEEDS, 10 PARAGON SQUARE, HULL, 25 BERNARD ST., SOUTHAMPTON 30 NARROW WINE ST., BRISTOL or direct from HOBBIES LTD., DEREHAM, NORFOLK.

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